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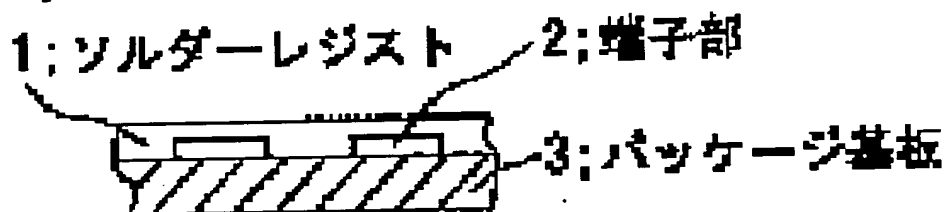
MANUFACTURE OF SOLDER BUMP ELECTRODE AND SOLDER BUMP ELECTRODE**Pub. No.:** 11-054656 A]**Published:** February 26, 1999 (19990226)**Inventor:** ITO KATSUMI**Applicant:** NEC CORP**Application No.:** 09-220972 [JP 97220972]**Filed:** July 31, 1997 (19970731)**International Class:** H01L-023/12; H01L-021/60; H01L-021/321**ABSTRACT**

PROBLEM TO BE SOLVED: To provide a method of manufacturing solder bump electrodes that can maintain a predetermined interval between a substrate and a package and permit stable mounting, even if there are variations in mounting temperature by providing a structure, in which a high melting-point solder ball or conductive metal ball is covered with a low melting-point solder ball and by making the size of the high melting-point solder ball or conductive metal ball equal to a desired predetermined interval, in a BGA package.

SOLUTION: An opening is formed only at a terminal portion 2 in a solder resist 1 which is applied over the entire surface of a package substrate 3. A small quantity of liquid high melting point solder 4 is dropped. Such a small quantity of solder 4 becomes spherical by the surface tension and solidifies. An appropriate quantity of liquid low melting point solder 6 is dropped, so that a low melting point solder ball 7 is formed so as to cover the high melting point solder ball 5 formed as described.

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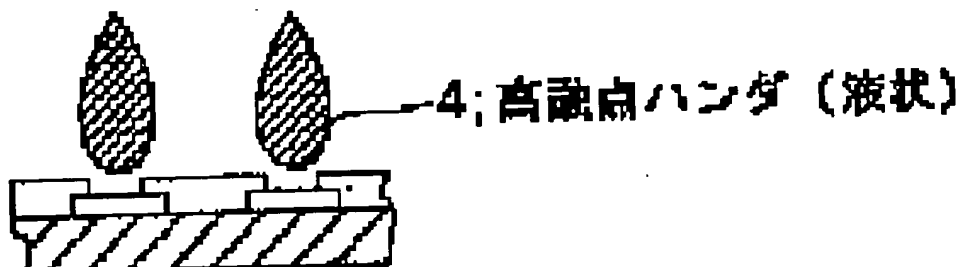
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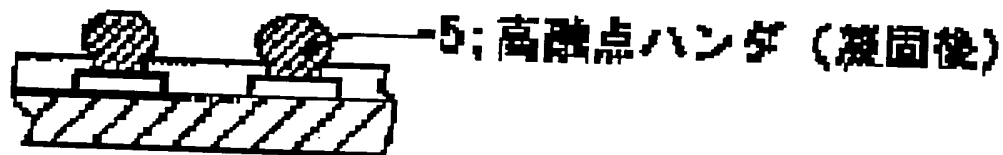
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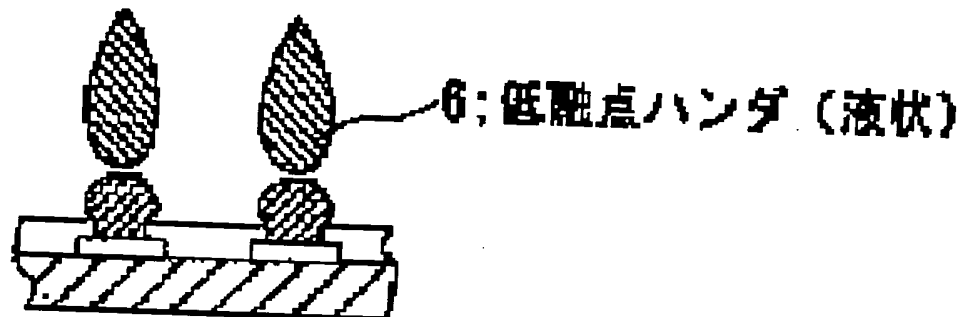
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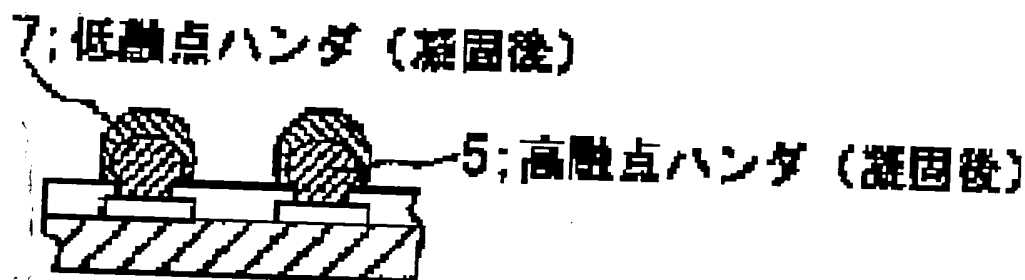
(d)



(e)



(f)



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